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Grass Seed Production

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farm income. Preliminary investigations indicate that it may be possible to combine seed production with the growing of grass for pasture, hay, or silage. Specific procedures must be adjusted to the peculiar characteristics of each grass, but certain procedures can be presented here in generalized form.

Sow Adaptable Varieties In Rows or Solid Stands

Grass seed of good quality, free from weeds and inert matter, should be used to insure early emergence and good stands. New strains of some species developed to meet local and regional environmental conditions are better adapted than imported or ordinary strains. If the seed of an improved strain is not available, however, use the seed of local or regional origin that is best adapted and that will be in demand.

Seeding methods for many of the grasses grown for seed are the same as for hay and pasture establishment. The seed is sown broadcast or with a drill on a well-prepared seedbed. Mixtures of grasses or of grasses and legumes may be used if the harvested grass can be separated by mechanical means or if the dates of maturity differ sufficiently for pure seed to be obtained. This practice, however, is not generally recommended in the Pacific Northwest region.

Certain grasses, including red and Chewings fescue, meadow fescue, and orchard grass, apparently produce more seed when grown in rows than in solid stands. Timothy, ryegrass, and tall oat-

grass, however, are equally productive in close drill and in row plantings. Grasses that have a tendency to lodge badly are usually best planted in solid stands. Row plantings of new or improved strains are recommended as an aid to the maintenance of the purity of the seed. To facilitate cultivation, the rows should be at least 24 to 30 inches apart.

Fertilize Much as for General Crop Production

Tests to determine the fertilizer treatments best suited for maximum seed production have been limited, but practices generally recognized as desirable for general crop production are usually satisfactory for seed production. Nitrogen applied early in spring on old established stands has often increased seed yields of most grasses. The quantity varies, but 100 to 200 pounds an acre of sulfate of ammonia or its equivalent has been found beneficial. If the grass stands remain down for any length of time, a complete fertilizer, as 4-12-4 or the nearest available equivalent obtainable under wartime restrictions, applied at 300 to 500 pounds an acre will be profitable. The weed population usually is not so great on the fertilized plots.

Controlled Grazing Benefits The Next Year's Seed Harvest

On old established grass stands, early spring grazing will not materially reduce seed production and may be beneficial in keeping down weed competition. Graz-

ing should be controlled and the livestock removed in time to insure a seed crop. In spring and early summer, when there is usually a surplus of pasture, a part of the field may be fenced off to defer grazing until after the seed is harvested.

After the seed is harvested, the fields should be grazed or mowed closely and the old growth removed. These fields provide a good source of supplemental summer and fall pasture, and their use for this purpose is beneficial to the next year's seed harvest. Close grazing late in the fall, however, should not be practiced.

Row plantings should be cultivated to keep down the weeds and to insure a cleaner seed crop. Noxious weeds and undesirable grasses should be removed by hand roguing.

Special Harvesting Equipment Is Not Ordinarily Necessary

The recommendations for time of harvesting for seed production are similar to those for harvesting small grains. If seed is harvested with the binder, the season should begin earlier than when a combine is used. It is advisable to begin harvesting with a binder when seeds in 75 percent or more of the heads are in the late dough stage, or when the uppermost seeds in the heads begin to shatter slightly. Experience as well as seasonal conditions will determine the optimum time to harvest for best-quality seed.

Many of the grasses do not require special harvesting equipment. For tall-growing grasses the grain binder can be

used with the cutting bar set just low enough to get all the seed heads and to make a bundle that will hold together and shock well. The shocks should be small, with the heads tied together to prevent possible loss from wind and weather. The time required for curing in the shock varies, but under favorable conditions threshing may begin within 2 or 3 weeks. If the area is desired for pasture, the shocks can be removed in 10 days to 2 weeks and placed under cover or stacked for later threshing. In handling, care must be taken to prevent loss by shattering.

Combines may be used, but if combined direct, the seed should be thoroughly ripe, in which case there is danger of loss from shattering. If the grass is cut and allowed to cure in the windrow, the combine, with finger or lifter pick-up attachments, can be used without much loss of seed. The finger type is much better than the revolving type of pick-up, as there is less shattering of seed. This method also gives the seed time to mature and dry on the cut stems and reduces handling for drying and curing after harvest. Headers also are used and the headed material deposited in windrows. The headings are threshed with combines with pick-up attachments.

Seed strippers are used on some of the finer growing grasses, as Kentucky bluegrass. Power-drawn strippers remove the seed from the head or pull the heads from the stalk. The stripped seed is then cured in long windrows, either out of doors or under cover. The field mower

may be used and the cut material put in windrows. If the crop is ripe and dry, it should be raked when wet with dew. The better method is to use a windrow attachment on the mower in order to reduce handling. It may be necessary to turn the windrows to dry the seed, and care must be exercised to prevent loss by shattering. For harvesting small quantities of seed, hand strippers are often used. Such strippers have long been used in Kentucky for harvesting Kentucky bluegrass, and they work rather successfully on some of the other grasses.

Thresh, Cure, and Clean By Established Methods

Since most of the grass seeds are light and of variable size, each species may require slightly different adjustments of concaves, riddles, screens, and air blast to prevent injury or possible loss of seed. These adjustments may vary with different seasonal conditions. The ordinary grain thresher or combine thresher may be adjusted to thresh most of the grasses. For the most satisfactory threshing and cleaning it is usually necessary to reduce the speed of the cylinder, adjust the riddles, use special screens, and reduce the air. The best adjustments for any particular grass can be learned only by experience, although much can be gained by discussing problems with men familiar with the operation of threshers and combines.

The quality of seed can often be materially improved by careful and timely handling immediately after harvesting.

Failure to take necessary precautions to dry immature seeds carrying a high percentage of moisture may lower the quality or reduce the quantity of the seed. The moisture content of seed harvested by strippers or combines is usually rather high; the seed should be thoroughly dried before bagging or placing in permanent storage. Stripped seed, as Kentucky bluegrass, is cured out of doors by placing in long narrow piles or ricks, not more than 18 to 24 inches high. The area selected should be clean and well-drained. The seed is turned at frequent intervals until dry. If cured under cover, it can be spread in a thin layer and turned frequently enough to prevent heating. Seed harvested by combine should be similarly handled, although it is usually cleaner and freer from trash than when stripped. For this reason, it is well to dry the seed under cover to prevent injury and discoloration by weather.

If free from weeds and carefully harvested, threshed, and cured, much of the seed can be cleaned satisfactorily with special equipment. The ordinary fanning mill, with proper screens and air adjustment, can be used to remove straw, chaff, and other inert matter. **The need for producing and marketing clean seed cannot be overemphasized.** Clean seed is much easier to sow, gives better and more uniform stands, and commands a higher price. It may be necessary to sell the seed of certain grasses in the rough-cured condition or to ship it for final cleaning or processing to processors who have special equipment.

Some seeds that have long awns, or hairy appendages, are difficult to clean and cannot be sown through ordinary seeding equipment. Methods of processing these have been developed to remove the appendages with little loss or injury. Different methods are used, depending upon the seed, but the hammer mill, either the swinging or the solid hammer type, is most commonly used. Care must be observed in the adjustment of the speed of the cylinder, rate of feeding into the machine, and use of the correct size of screens. In general, the speed should be about half the average speed for grinding. The seed should be fed into the machine at full capacity, to reduce injury and insure effective removal of appendages. The length and diameter of the seed should determine the size of screen. These adjustments again must be governed by experience, and care must be exercised to avoid injury and yet leave the seed in the best mechanical condition.

Knowledge of Regulations and Loan Procedures Will Assist

A knowledge of the Federal and State seed regulations is necessary if seed is to be offered for sale either wholesale or retail. It will also give the grower a better understanding of the necessary procedure in obtaining labels, in marketing, and in obtaining samples for germination and purity.

Under the Agricultural Conservation Program, production-practice payments are available for harvesting grass seed

in designated areas. In addition, price-supporting loans have been announced by the Food Production Administration to encourage the harvesting of grass seed. For specific information, consult the chairman of the county agricultural conservation committee or the local committeeman.

Success Depends on Varieties Used, Culture, and Available Equipment

Success or failure in grass seed production is predicated largely on the use of species or varieties in demand, on proper cultural practices, and on availability and proper use of equipment for efficient harvesting and processing. Potential seed growers should follow practices that will insure the largest harvest of the highest quality of seed possible under their particular environmental conditions.

Seed Yields Are Governed By the Time of Harvest

Timothy: Harvest when tips of first heads begin shattering, with binder or combine from windrow. Seed yields, 100 to 250 pounds an acre.

Redtop: Cut with binder when heads turn brown, or combine from windrows; shatters badly. Seed yields, 50 to 100 pounds an acre.

Kentucky bluegrass: Heads are hand- or power-stripped when partially straw-colored, and stripped seed must be cured before threshing and cleaning. Seed yields, 50 to 200 pounds an acre.

Orchard grass: Cut with binder or combine when the heads are dry enough to shatter some seed when struck across the hand. Seed yields, 125 to 600 pounds an acre.

Brome grass: Cut with binder when the branches of the panicle, or seed head, and the upper part of the straw are turning brown; or with combine after seed has become hard and is beginning to shatter; the cutting bar of the combine should be set well above the leafy growth. Eliminate all or most of the air from the cleaning fan of either combine or thresher. Seed yields, 100 to 700 pounds an acre.

Ryegrass: Cut with binder or header when seed is in early hard dough stage; with combine at slightly later stage. Yield of common or Italian ryegrass, 300 to 600 pounds an acre; perennial ryegrass, 150 to 300 pounds.

Meadow fescue: Cut with binder or combine when heads turn yellowish brown to purple and begin to droop over. Seed yields, 200 to 600 pounds an acre.

Red and Chewings fescues: Cut when heads turn purplish brown and straw becomes yellow. The combine is best, but binder may be used. In Oregon and Washington, except in the fog belt, the binder is used almost exclusively, since too much seed is lost by shattering when the combine is used. Seed yield, 200 to 400 pounds an acre.

Greater Seed Production Will Increase Farm Incomes

SPECIALIZED grass seed production in the United States is localized in the Pacific Northwest. No generally accepted special technique for culture has been developed elsewhere, and few attempts have been made to encourage specific attention to production. In other regions much of the seed is harvested from established pastures or hayfields, and these may be nearly pure stands or mixtures of grasses and legumes.

The present war emergency complicates maintaining or increasing grass seed production. On one hand, the need for pasture and hay to supply more meat and dairy products has increased the demands for forage-crop seeds. On the other hand, the acreage of grasses for hay, pasture, and silage has been reduced, particularly in the Corn Belt, where much of it has been plowed for planting to soybeans and other emergency war crops, and this has increased the demand for pasturage and reduced the seed supply. The supply for normal use has been further reduced by the practical elimination of imports, by the requirements of the lend-lease program, and by military use. All these factors contribute to the need for increasing seed production.

The recent development of small combines and seed-harvesting equipment makes it possible for grass seed production to become a profitable addition to the

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